CODE 548

EXPERIMENTAL TESTS OF SCHIST MASONRY WALLS STRENGTHENED WITH GROUTS

Luso, Eduarda[1]

1: ISISE - Institute for Sustainability and Innovation in Structural Engineering
Polytechnic Institute of Bragança, Department of Civil Constructions
Campus Sta Apolónia, 5300-253 Bragança, Portugal
e-mail: eduarda@ipb.pt, web: http://www.isise.net

KEYWORDS: Schist masonry; grouts; injection; walls.

ABSTRACT

Grouting is a well-known technique for conservation and strengthening of historic masonry buildings which can be durable and mechanically efficient, whilst preserving the historic value. The selection of a grout for repair is based on the physical and chemical properties of the existing masonry. Compatibility between the existing and the injection material is a major factor in the success of the intervention. The effect of ternary grouts and hydraulic lime-based grouts on the compressive and shear strength of three-leaf stone masonry has been widely investigated [1-4]. However, few studies have been done on walls with one or two leafs.

Subsequently, in the present research an experimental campaign addressing the behaviour of masonry walls of schist stone with one or two leafs, when subject to injection grouting, was performed. The analysis of the mechanical behaviour of masonry walls of schist, very common in old buildings in the northeast or Portugal and also in the north of Spain, was carried out based on experimental results of uniaxial compression tests. The influence of strengthening by injection grouting was analysed considering two types of grouts (one commercially available and another prescribed). A comparative mechanical analysis was performed between the walls tested and also the bond strength capacity was tested between the grouts and schist. The interior of walls were inspected, after dismantling, in order to check the amount of voids filled after the intervention. The results obtained showed that these strengthening techniques were successful in increasing the compressive strength of the walls and in improving their behaviour under compressive loads.